Optimizations for Live Event, Real-time, 3D Object Tracking

Abstract

Various combinations of camera assembly **500**, tracking frequency **510**, energy source **520**, marker: emission method **530**, marker: physical form **540**, marker: reflective shape **550**, ID: location **560**, ID: encoding method **570**, ID: obtained **580** and calibration method **590** forming a preferred embodiment **1004** as well as several alternative embodiments for tracking the movement of multiple objects within a predefined area. Camera assembly **500** optionally comprises fixed volume tracking **502**, fixed area tracking **504** and movable volume tracking **506**. Tracking frequency **510** optionally comprises visible light **512**, infrared light **514** and ultraviolet light **516**. Energy source **520** optionally comprises ring lights emitting visible or IR frequencies **522**, existing lights emitting visible frequencies **524** and existing lights modified to emit non-visible frequencies **526**. Marker: emission method **530** optionally comprises retroreflective markers **532**, reflective markers **534** and fluorescent markers **536**. Marker: physical form **540** optionally comprises spherical **542** and flat **544**. Marker: reflective shape optionally comprises uniform circular **552** and non-uniform multi-shape **554**. ID: location **560** optionally comprises full body **562** and top surface of body **564**. ID: encoding method **570** optionally comprises unique constellation **572** and encoded markings **574**. ID: obtained **580** optionally comprises during game surface tracking **582** and outside of game surface tracking **584**. Calibration method **590** optionally comprises pre-tracking **592** and simultaneously with tracking **594**.